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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
BAKER, STEPHEN M	

ART UNIT	PAPER NUMBER
2133	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/618,455	FOISY ET AL.	
	Examiner	Art Unit	
	Stephen M. Baker	2133	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-51 and 53-63* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-51 and 53-63* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *011204*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

In the Summary, paragraph [0007], and elsewhere, the meets and bounds of "information additive codes" are unclear. The phrase "information additive codes" is essentially defined only by vague examples (*i.e.* "LT codes", "Raptor Codes" and "Chain Reaction Codes"), and by the stipulations that "(i)nformation additive coded information ... exhibits the unique property that any coded segment can be used to recover the original source data", and the stipulation that a receiver "need only receive some threshold amount of the coded data", with both stipulations apparently being applicable to any error or erasure correcting code. Further regarding the term "information additive code", US Patent No. 6,307,487 ("Luby I"), the first parent application and the first application to use the phrase "information additive code", describes so-called "Chain Reaction Codes" wherein "a recipient ... can lose packets in a random pattern and still have *a good chance that the great majority of data* received is 'information additive' data, *i.e.* data that helps in the recovery process rather than being duplicative of information already available", thus it appears that "information additive codes" are not entirely "information additive" thereby apparently rendering the phrase "information additive code" essentially non-descriptive in the context of error or erasure correcting codes. Luby I further contradictorily indicates that each encoded symbol "is *highly* independent so that it is information additive", reinforcing the notion that any error or

erasure correcting code is an "information additive code". Fig. 16 of Luby I shows a "Chain Reaction Code" in which segment "C" must be received to complete the decoding, in contrast to the property described in the present application wherein a receiver "need only receive some threshold amount of the coded data" as opposed to needing to receive specific segments, further reinforcing the notion that any error or erasure correcting code is an "information additive code". Accordingly, the scope of an "information additive code" is here presumed met by any error or erasure correcting code.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-51 and 53-63 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1, 4, 5, 12-49, 57 and 61: as explained in paragraph 1, above, the meets and bounds of "information additive code(s)" are unclear and inconsistently presented.

Regarding claim 49: "from one of a plurality of sources" presumably was intended to be "from one or more of a plurality of sources".

Regarding claim 53: "encoding source data into output symbols" presumably was intended to be "encoding source data into output symbols comprising information additive code", as applicant presumably does not intend to entirely pre-empt the well-known and broad concept of broadcasting data that has been encoded in any manner and carrier-modulated.

Regarding claims 50 and 62: "generate, from the sequence of received output symbols, a respective sequence of decoding keys" is apparently incorrect as the disclosed "decoding keys" are apparently distinct from, rather than included within, the "output symbols" (see, e.g. [0048]).

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

5. Claims 1, 2, 6, 8, 12-14, 24, 25, 27, 35, 36, 38, 39, 41, 42, 45, 46, 49, 53, 54, 57, 58 and 61 are rejected under 35 U.S.C. 102(a) as being anticipated by U.S. Patent No. 6,278,716 to Fischer *et al* (hereafter "Fischer").

Regarding claims 1, 6, 8, 14, 27, 38, 41, 42, 45, 49, 57 and 61: Fischer discloses arrangements for encoding $n > k$ coded packets from k file data packets using a host computer program and one-way satellite broadcasting the n encoded packets to plural subscriber computers, wherein each subscriber computer is programmed to reconstruct

the original *k* file data packets using *k* received coded packets, regardless of which *k* coded packets are received. The file may be broken into chunks, with each chunk providing *k* data packets. Fischer thus discloses arrangements for encoding, satellite broadcasting, and decoding an "information additive code" (*i.e.* a packet erasure correction code) comprising one or more encoded chunks.

Regarding claim 2: Fischer's encoder and decoder are not "multi-stage" and thus must be considered "single stage".

Regarding claims 12, 13, 24, 25, 35, 36 and 53: Fischer's transmission and reception via satellite of course requires satellite signal carrier modulation and demodulation.

Regarding claims 39, 46, 54 and 58: Fischer's data file before encoding is of course "source data" that has been "arranged" forming an "ordered sequence".

6. Claims 1, 2, 4-8, 12-14, 21-28, 32-47, 49, 50, 53-55, 57-59, 61 and 62 are rejected under 35 U.S.C. 102(a) as being anticipated by U.S. Patent No. 6,081,907 to Witty *et al* (hereafter "Witty").

Regarding claims 1, 6, 14, 27, 38, 41, 42, 45, 49, 57 and 61: Witty discloses arrangements for encoding $n > k$ coded packets from *k* file data packets using a host computer program and satellite broadcasting the *n* encoded packets to plural client computers, wherein each client computer is programmed to reconstruct the original *k* file data packets using *k* received coded packets, regardless of which *k* coded packets are received. The file may be broken into groups, with each group providing *k* data packets. Fischer thus discloses arrangements for encoding, satellite broadcasting, and

decoding an "information additive code" (*i.e.* a packet erasure correction code) comprising one or more encoded groups.

Regarding claim 2: Witty's encoder and decoder are not "multi-stage" and thus must be considered "single stage".

Regarding claims 4, 21, 32, 43 and 44: Witty discloses that, on the sending side, data received at a bridge-router (32) is converted from the packet format of the network (28) to a format appropriate for the broadcast network (30), thus indicating a "protocol converter" operation by the bridge-router.

Regarding claim 5: Witty discloses a modem (78) providing a "secondary channel" for the client computers.

Regarding claims 7, 8, 26 and 37: Witty discloses that the broadcast network medium can alternatively be radio (terrestrial) or cable (col. 3, lines 33+).

Regarding claims 12, 13, 24, 25, 35, 36 and 53: Witty's transmission and reception via satellite of course requires satellite signal carrier modulation and demodulation.

Regarding claims 22, 23, 33 and 34: the protocol used by Witty's network (28) can be IP (col. 3, line 24).

Regarding claims 28, 40, 47, 50, 55, 59 and 62: Witty's packets include sequence numbers that are isolated (re-generated) for use in decoding, serving as "decoding keys".

Regarding claims 39, 46, 54 and 58: Witty's data file before encoding is of course "source data" that has been "arranged" forming an "ordered sequence".

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. Claims 4, 5, 9, 10, 17, 18, 21, 32, 43 and 44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fischer.

Regarding claims 4, 21, 32, 43 and 44: although Fischer discloses that the host computer (11) may be extended with a transmission communication device (13) for the transfer of encoded data via cable to a satellite uplink transmitter (14), Fischer does not describe a "protocol converter" for generating the satellite uplink data. Official Notice is given that the utility of converting a computer communication protocol into a satellite broadcast protocol, for the transmission of computer data files by satellite, was widely known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement Fischer's connection between the host and the satellite uplink using a protocol conversion processing. Such an implementation would have been obvious because the utility of converting a computer communication protocol into a satellite broadcast protocol, for the transmission of computer data files by satellite, was already widely known. Such an implementation would presumably involve a complementary conversion from the satellite protocol at the subscriber-side.

Regarding claim 5: although Fischer discloses that the subscriber computer (20) may be a PC, Fischer does not describe a "secondary channel" for the subscriber computers. Official Notice is given that the utility of providing a PC with numerous "channels", e.g. a dial-up modem, an ethernet card and a wireless networking card, was widely known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide Fischer's subscriber PCs with a secondary channel. Such an implementation would have been obvious because the utility of providing a PC with numerous "channels", e.g. a dial-up modem, an ethernet card and a wireless networking card, was already widely known.

Regarding claims 9, 10, 17 and 18: Fischer's encoder is embodied by software on a general-purpose computer, the general-purpose computer presumably have a "cache unit" and a "control unit" coupled to the cache and to a software instruction processing unit, for coordinating the transfer of data between the cache and the software instruction processing unit during encoding, thereby "commanding" the transfer of data to the software instruction processing unit. Furthermore, such cache would inevitably provide "segment buffers" in storing the units of data to be encoded, would inevitably involve an "upload" unit for loading the data to be encoded into the cache, and would inevitably involve a "command port" to receive the cache control commands. Fischer doesn't discuss the internal details of the programmed computer, and thus doesn't disclose a controlled cache. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement Fischer's

encoder with a "cache unit" and a "control unit" functioning as recited in the claims. Such an implementation would have been obvious because Fischer's encoder is embodied by software on a general-purpose computer, and because a general-purpose computer typically has a controlled cache.

9. Claims 9, 10, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Witty.

Regarding claims 9, 10, 17 and 18: Witty's encoder is embodied by software on a general-purpose computer, the general-purpose computer presumably have a "cache unit" and a "control unit" coupled to the cache and to a software instruction processing unit, for coordinating the transfer of data between the cache and the software instruction processing unit during encoding, thereby "commanding" the transfer of data to the software instruction processing unit. Furthermore, such cache would inevitably provide "segment buffers" in storing the units of data to be encoded, would inevitably involve an "upload" unit for loading the data to be encoded into the cache, and would inevitably involve a "command port" to receive the cache control commands. Witty doesn't discuss the internal details of the programmed computer, and thus doesn't disclose a controlled cache. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement Witty's encoder with a "cache unit" and a "control unit" functioning as recited in the claims. Such an implementation would have been obvious because Witty's encoder is embodied by software on a general-purpose computer, and because a general-purpose computer typically has a controlled cache.

Double Pat nting

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 1 and 3 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 27 of copending Application No. 10/032,156. Although the conflicting claims are not identical, they are not patentably distinct from each other because the encoder recited in claim 27 of 10/032,156 serves as an encoder of the "information additive code" recited in present claim 1, and is a "multi-stage" encoder, however claim 27 of 10/032,156 does not recite a "broadcast" transmission. A corresponding decoder for the encoder recited in claim 27 of 10/032,156 is presumably also "multi-stage" as the encoding and decoding processes are complementary. Official Notice is given that the convenience of using a broadcast medium, such as a wireless medium, to transmit data was well known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to apply the encoder recited by claim 27 of 10/032,156 (and a complementary decoder) to encoding (and decoding) of data

for transmission on a broadcast medium. Such an implementation would have been obvious because the convenience of using a broadcast medium, such as a wireless medium, to transmit data was already well known.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

12. Claims 14 and 20 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of copending Application No. 10/367,573. Although the conflicting claims are not identical, they are not patentably distinct from each other because the FEC code recited in claim 1 of 10/367,573 serves as the "information additive code" recited in present claim 14, and the encoding method steps recited therein correspond directly with the encoder elements recited in present claim 20, however claim 1 of 10/367,573 does not recite a "broadcast" transmission. Official Notice is given that the convenience of using a broadcast medium, such as a wireless medium, to transmit data was well known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement the encoding method recited by claim 1 of 10/367,573, using means for performing each step of the method, and to transmit the encoded data using a broadcast medium. Such an implementation would have been obvious because the convenience of using a broadcast medium, such as a wireless medium, to transmit data was already well known.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

13. Claims 27, 30 and 31 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1 and 14 of copending Application No. 10/459,370. Although the conflicting claims are not identical, they are not patentably distinct from each other because the FEC code recited in claim 1 of 10/459,370 serves as the "information additive code" recited in present claim 27, and the encoding method steps recited therein correspond directly with the encoder elements recited in present claim 30, and the encoding method steps recited in claim 14 of 10/459,370 correspond directly with the encoder elements recited in present claim 30, however claim 1 of 10/459,370 does not recite a "broadcast" transmission. Official Notice is given that the convenience of using a broadcast medium, such as a wireless medium, to transmit data was well known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement the encoding methods recited by claims 1 and 14 of 10/459,370, using means for performing each step of the methods, and to transmit the encoded data using a broadcast medium. Such an implementation would have been obvious because the convenience of using a broadcast medium, such as a wireless medium, to transmit data was already well known.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

14. Claims 14 and 15 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,307,487. Although the conflicting claims are not identical, they are not patentably

distinct from each other because the FEC code recited in claim 1 of the patent serves as the "information additive code" recited in present claim 14, and claim 1 of the patent recites the encoding method corresponding to the encoder recited in present claim 15, however claim 1 of the patent does not recite a "broadcast" transmission. Official Notice is given that the convenience of using a broadcast medium, such as a wireless medium, to transmit data was well known at the time the invention was made. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to implement the encoding method recited by claim 1 and 14 of U.S. Patent No. 6,307,487 in an encoder, and to transmit the encoded data using a broadcast medium. Such an implementation would have been obvious because the convenience of using a broadcast medium, such as a wireless medium, to transmit data was already well known.

Allowable Subject Matter

15. Claims 11, 16, 19, 29, 48, 51, 56, 60 and 63 would be allowable if rewritten to overcome the rejections under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Conclusion

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stephen M. Baker whose telephone number is (571) 272-3814. The examiner can normally be reached on Monday-Friday (11:00 AM - 7:30 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert DeCady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Stephen M. Baker
Primary Examiner
Art Unit 2133

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